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Weekly Bulletin



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EDITOR

THE NEWER DEVELOPMENTS IN THE CONTROL OF  
SCARLET FEVER.\*

By W. H. KELLOGG, M.D., Director State Hygienic Laboratory.

The recent announcement of Doctors G. F. and Gladys H. Dick of Chicago of the culmination of a long series of investigations in the perfection of a test for scarlet fever immunity and specific means for immunization against and cure of this disease has excited a great interest in the ranks of the medical profession and of health workers generally. We have so few specific preventive measures and scarlet fever is such an important communicable disease that we welcome the means for controlling it which are apparently now placed in our hands.

Scarlet fever ranks very high not only as a cause of death among the communicable diseases of childhood, but it is still more to be feared on account of the damage which it inflicts upon various organs and tissues of the body resulting in disability in later life.

The work of the Doctors Dick has extended over a number of years and they have not been the only ones engaged in this field of research. It has long been suspected that some form of streptococcus was the cause of scarlet fever as it is nearly always present in the throats of the victims of this infection. Experimental work in the hands of many investigators has been disappointing and from time to time many different organ-

isms have been put forward as the microbial cause. One of the stumbling blocks in the way of solution of this problem has been the resistance of the lower animals to the infection and the difficulty of determining whether or not an infection has taken place owing to the different clinical manifestations as compared with the disease in man. The Dicks' early experiments demonstrated this and showed the necessity of experimentation upon the human subject and for this purpose they secured volunteers who submitted themselves to experimental inoculation with materials in various forms from scarlet fever cases. On several occasions when cultures of streptococci were used some evidence of infection as manifested by a sore throat occurred, but the absence of a definite rash made the condition doubtful. One great difficulty was to be sure that the volunteers were immune to scarlet fever and the history with many persons is rather doubtful. Finally, from a group of persons selected with a view of obtaining a high average of intelligence and greater dependence upon their previous scarlet fever history, results were obtained with a streptococcus culture obtained from a lesion on the finger of a nurse recently recovered from scarlet fever. Filtrates of this culture were inoculated with no result, showing either that the organism was not a filtrable virus associated with the streptococcus or that it was not present. A later test made with the same group of persons,

\*Read at Sixteenth Annual Conference of California Health Officers, Monterey, October 10, 1924.



using the culture from which the filtrate was made, gave a very definite result in one individual who developed clinical scarlet fever in 48 hours. This showed that the streptococcus and not some associated filtrable virus was the cause of the infection and it was also evident that the rash of scarlet fever is produced not by the organism in the skin but by the absorption of some toxic substance from the localized site of infection.

This places scarlet fever in the same class with diphtheria, so far as the general mechanism of the infection is concerned. The causative organism is localized in the throat, produces a toxin which is absorbed and gives rise to the symptoms of the disease. It had previously been thought that the scarlet fever streptococcus did not produce a toxin in cultures and the demonstration of such toxin was evidently interfered with by the lack of susceptibility of the experimental animals. The Dicks proved the presence of a toxin in the condensation water of blood agar tubes by innoculating small quantities of this material after filtration into the skin in the same way that the Schick test is performed. They found in a series of these tests that 42 per cent of persons with no previous history gave a positive reaction, leaving quite a large percentage who gave no reaction which was interpreted as immunity. This has been since verified by a number of observers and it is now generally accepted that the Dick test, which is the intracutaneous injection of a small quantity of the toxin, is an index of immunity or susceptibility to scarlet fever exactly as is the Schick test for diphtheria. Convalescing cases of scarlet fever uniformly gave negative results and in six cases that were tests both before and after their attack of scarlet fever it was noted that all six gave a positive reaction before and a negative reaction after. This pointed very definitely toward the development of an antitoxic immunity following the infection. The Doctors Dick have demonstrated also that persons can be immunized by the toxin when given in doses of from three or four hundred to one thousand times the skin test dose. These immunizing injections are given in a series of three, a week apart, as when immunizing with toxin-antitoxin against diphtheria is practiced. The immunity following recovery from scarlet fever is evidently an antitoxic immunity and the next development will be the use of an antitoxic serum for the treatment of cases. Such a serum has already been prepared both by the Dicks and by Dochez of the Rockefeller Institute.

The Dicks report that one group of 125

persons, which included 52 children that were exposed to scarlet fever, were tested and 62 gave positive reactions. Of these 62 ten were already showing symptoms and they were given immune serum from recovered cases as a measure of passive immunization. The balance of the positive group were immunized with toxin and no cases of scarlet fever resulted in this group.

We may look forward to the rapid development of control measures in scarlet fever based upon these discoveries and it only awaits further confirmation of the work of the Doctors Dick and Dochez and others and the preparation of dependable materials by the biologic laboratories for the universal adoption of the same procedure in scarlet fever that we are now carrying out in diphtheria. While we all enthusiastically look forward to the immediate adoption of the skin test for susceptibility and the immunization with toxin as put forward by the Dicks, we must not take any chances of jeopardizing the future of this work and of the control of diphtheria also by rushing the matter unduly. It is necessary that considerable work be done under carefully controlled conditions and full information obtained regarding the incidence of reactions from the administration of the toxin before it is generally adopted. A number of persons, including the writer of this article, have been supplied by the Doctors Dick with a supply of the toxin for purposes of carrying out this preliminary work of investigation and until more information is available we can not promise to undertake any very extensive campaigns of immunization at the present. We can at this time, I think, say very definitely that everything points toward the absolute correctness of the work and conclusions of the Doctors Dick and that we are now in possession of a means for detecting susceptible individuals and for immunizing them against scarlet fever. We will shortly have a serum for the curing of cases and it is not believed that there will be any more objection to the immunizing of children with this toxin than there is with the toxin-antitoxin for diphtheria.



Ring out old shapes of foul disease.—Tennyson.



It's better to be inspected when suspected than to be dissected when infected.—Hygeia.



If a man defile the temple of God, him shall God destroy. For the temple of God is holy, which temple ye are.—1 Cor. 3:17.



## Have You a Cold?

Professor Rosenau of Harvard has very truly said, "Could the sum total of suffering, inconveniences, sequelae, and economic loss resulting from common colds be obtained, it would at once promote these infections from the trivial into the rank of the serious diseases."

*When you have a cold*, remember that the healthy human body will quickly throw off an ordinary cold if given a chance, but if the vital resistance is lowered by fatigue the cold will hang on and very possibly prepare the way for pneumonia or some other more serious infection. The best possible thing to do when a cold is coming on is to go to bed for twenty-four hours. With young children this rule can and should be literally followed and even adults who have their business or household duties to attend to should get into bed just as soon as those duties are done and secure every moment of complete rest that circumstances make possible.

When the first symptoms of a cold appear, remember, too, that you are a real danger to your fellows and should keep away from other people just as far as possible and strive to avoid handshaking and the handling of food and of articles to be handled by others. Children in particular should be considered, since so often "a little cold in a big person becomes a big cold in a little person."

*When you don't have a cold*, remember that every cold comes from getting into the mouth or nose infected material from the mouth or nose of some other person and that it is generally one's own fingers which accomplish the result. This is an unsavory truth but an important one. If the hands were always kept away from the face and always washed thoroughly before meals the cold would no longer be a "common" one.—New Haven Health Department.



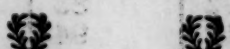
Know thyself.—Socrates.



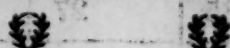
Disease is a retribution of outraged nature.  
—Hosea Ballou.



Carelessness for a moment may cause regrets for years.



A little care for a little while every day will often prevent serious catastrophe.



You can't trade your body in for a new model, so better take good care of the one you have.

## LIST OF DISEASES REPORTABLE BY LAW.

ANTHRAX	MUMPS
BERI-BERI	OPHTHALMIA NEONATORUM
BOTULISM	PARATYPHOID FEVER
CEREBROSPINAL MENINGITIS (Epidemic)	PELLAGRA
CHICKENPOX	PLAGUE
CHOLERA, ASIATIC	PNEUMONIA
DENGUE	POLIOMYELITIS
DIPHTHERIA	RABIES
DYSENTERY	ROCKY MOUNTAIN
ENCEPHALITIS (Epidemic)	SPOTTED (or Tick) FEVER
ERYSIPELAS	SCARLET FEVER
FLUKES	SMALLPOX
FOOD POISONING	SYPHILIS*
GERMAN MEASLES	TETANUS
GLANDERS	TRACHOMA
GONOCOCCUS INFECTION*	TUBERCULOSIS
HOOKWORM	TYPHOID FEVER
INFLUENZA	TYPHUS FEVER
JAUNDICE, INFECTIOUS	WHOOPING COUGH
LEPROSY	YELLOW FEVER
MALARIA	
MEASLES	

## QUARANTINABLE DISEASES.

CEREBROSPINAL MENINGITIS (Epidemic)	POLIOMYELITIS
CHOLERA, ASIATIC	SCARLET FEVER
DIPHTHERIA	SMALLPOX
ENCEPHALITIS (Epidemic)	TYPHOID FEVER
LEPROSY	TYPHUS FEVER
PLAGUE	YELLOW FEVER

\*Reported by office number. Name and address not required.

Section 16. Public Health Act. All physicians, nurses, clergymen, attendants, owners, proprietors, managers, employees, and persons living in or visiting any sick person in any hotel, lodging house, house, building, office, structure, or other place where any person shall be ill of any infectious, contagious, or communicable disease, shall promptly report such fact to the county, city and county, city, or other local health board or health officer, together with the name of the person, if known, and place where such person is confined, and nature of the disease, if known.



The new attitude toward disease and ill health which emphasizes prevention rather than cure places a great responsibility on the school. This is but partly because the child throughout its most susceptible years spends so many hours of the day in the school under physically trying conditions presented by the school building itself and by the free intermingling and grouping of the pupils; but it is true, even more largely, because the possibility of instilling health knowledge and health habits is greatest in the school period of life. The school, therefore, has clearly two duties to perform: One is to assist in preventing physical defects and disease; the other, to assist in furnishing the teaching and training which will make and keep the body well and strong. The school can fairly discharge these duties only when every schoolhouse is both sanitary and safe; when every school is the beneficiary of competent medical inspection and health supervision, and when every school child is thoroughly trained in body, in health habits and living. To this end must be devoted the combined support and activity of all who desire to promote human efficiency and human happiness.



## MORBIDITY.\*

### Diphtheria.

195 cases of diphtheria have been reported, as follows: Los Angeles 49, San Francisco 13, Oakland 15, Modesto 5, Los Angeles County 12, San Diego 5, Fresno 7, Sacramento 10,

\*From reports received on December 8th and 9th for week ending December 6th.



Compton 5, Watsonville 7, San Fernando 1, San Benito County 2, San Leandro 1, Albany 1, Orange County 1, Huntington Park 4, Maywood 2, Tulare County 1, Fillmore 1, Calexico 1, Ventura County 4, Pasadena 4, Berkeley 2, Santa Rosa 2, Long Beach 1, Redwood City 1, San Rafael 1, Stockton 4, San Joaquin County 1, Burbank 2, Chico 1, Stanislaus County 1, Hayward 1, Lassen County 1, Merced County 2, El Segundo 1, Whittier 1, South Gate 2, Madera 1, Tehama County 2, San Jose 4, Tulare County 1, Monterey County 1, Salinas 1, Santa Cruz County 1, Richmond 2, Alameda County 3, Butte County 2, Selma 2.

#### Scarlet Fever.

157 cases of scarlet fever have been reported, as follows: Los Angeles 24, San Francisco 19, Alameda 8, Lincoln 7, Oakland 6, Los Angeles County 11, San Joaquin County 10, Orange County 6, San Diego 6, Chico 2, Maywood 2, Fresno County 4, Orange 3, Burbank 1, Santa Ana 2, Redlands 2, Alameda 1, Gilroy 1, Pasadena 2, Redwood City 3, Madera County 4, Stockton 1, Eureka 1, Sacramento 1, Yolo County 1, Torrance 1, San Jose 3, Tulare County 2, Richmond 1, San Diego County 1, Newman 1, Bakersfield 2, Watsonville 1, Berkeley 1, Pomona 1, Compton 3, Long Beach 4, Riverside 2, Redding 1, Venice 1, Kern County 1, Hanford 1, Selma 2.

#### Measles.

34 cases of measles have been reported, as follows: Los Angeles 16, Los Angeles County 8, San Francisco 2, South Gate 1, San Leandro 1, Compton 1, Alhambra 1, Berkeley 1, Sacramento 1, Alameda 1, Santa Monica 1.

#### Smallpox.

100 cases of smallpox have been reported, as follows: Los Angeles 31, Los Angeles County 23, Pomona 6, Orange County 5, Eureka 7, Oakland 6, Sacramento 1, San Diego 1, Sutter County 2, Ventura County 2,

San Francisco 1, Lassen County 1, Redwood City 1, Huntington Park 1, San Jose 1, Fresno County 3, Long Beach 2, Solano County 1, Ontario 1, Kern County 3, Santa Monica 1.

#### Typhoid Fever.

32 cases of typhoid fever have been reported, as follows: Stockton 6, Reedley 5, Los Angeles 2, Tulare County 1, Sacramento 2, Merced County 1, San Francisco 4, Fresno County 3, Los Angeles County 1, Banning 1, Riverside County 1, Calexico 1, Lassen County 1, San Joaquin County 1, Madera 1, California 1.

#### Whooping Cough.

119 cases of whooping cough have been reported, as follows: Los Angeles 29, Los Angeles County 21, San Francisco 14, Monterey County 23, Madera County 1, Orange County 2, Richmond 1, Glendale 3, San Diego 2, Oakland 1, Maywood 2, Riverside 1, Huntington Park 1, Alhambra 4, Berkeley 4, Stockton 2, Guadalupe 3, Albany 1, Long Beach 2, Venice 2, Tehachapi 3.

#### Poliomyelitis.

6 cases of poliomyelitis have been reported, as follows: San Leandro 2, Alameda County 1, Sierra County 3.

#### Epidemic Encephalitis.

3 cases of epidemic encephalitis have been reported, as follows: San Francisco 1, Bakersfield 1, San Diego 1.

#### Botulinus Poisoning.

Berkeley reported one case of botulinus poisoning.

#### Rabies (Human).

Los Angeles reported one case of rabies.

#### Epidemic Meningitis.

Los Angeles reported one case of epidemic meningitis.

### COMMUNICABLE DISEASE REPORTS.

Disease	1924				1923			
	Week ending			Reports for week ending Dec. 6 received by Dec. 9	Week ending			Reports for week ending Dec. 8 received by Dec. 11
	Nov. 15	Nov. 22	Nov. 29		Nov. 17	Nov. 24	Dec. 1	
Anthrax.....	0	1	0	0	1	0	0	0
Botulism.....	0	0	0	1	0	0	0	0
Cerebrospinal Meningitis.....	1	2	3	1	4	5	2	1
Chickenpox.....	201	264	223	334	194	125	140	193
Diphtheria.....	188	171	214	195	321	356	308	298
Dysentery (Bacillary).....	10	0	0	0	5	0	0	0
Epidemic Encephalitis.....	1	4	4	3	4	2	1	2
Gonorrhoea.....	75	73	86	96	83	161	96	142
Influenza.....	13	26	23	18	24	30	25	39
Leprosy.....	0	0	1	0	0	0	0	0
Malaria.....	2	0	0	1	2	4	1	0
Measles.....	24	35	26	34	265	315	291	326
Mumps.....	66	107	79	106	22	27	31	38
Pneumonia.....	114	55	53	83	82	56	52	85
Poliomyelitis.....	10	7	12	6	11	9	11	7
Rabies (Human).....	0	0	0	1	0	0	0	0
Scarlet Fever.....	113	137	164	157	198	255	251	213
Smallpox.....	100	98	80	100	92	83	111	164
Syphilis.....	166	132	111	122	112	94	140	165
Tuberculosis.....	179	118	207	134	134	199	150	174
Typhoid Fever.....	24	81	26	32	26	29	28	18
Typhus Fever.....	0	0	0	0	0	0	0	0
Whooping Cough.....	74	100	66	119	35	27	20	34
Totals.....	1361	1411	1378	1534	1615	1777	1658	1899